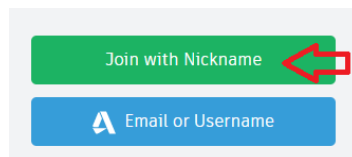


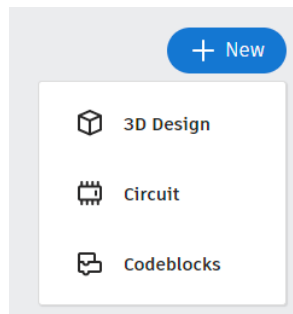
Coding Circuits in Series and Parallel	Grade 6 Electrical Phenomena, Energy and Devices
Student handout	

## Getting Started

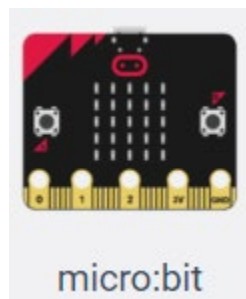
1. Sign-up on <https://www.tinkercad.com/>, choose “Students with Class Code”, and use the code given by the teacher to get started.
2. Choose “Join with Nickname”



3. Choose “NEW” → “Circuit” to create a new circuit on TinkerCad.

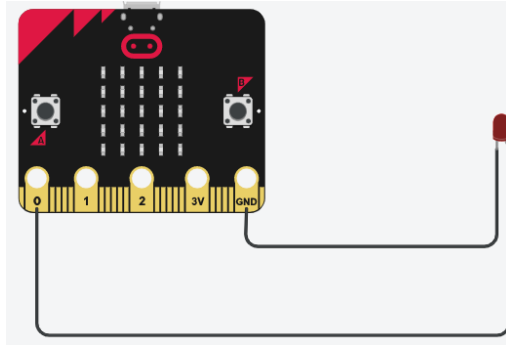


4. Add a micro:bit to your program to get started.

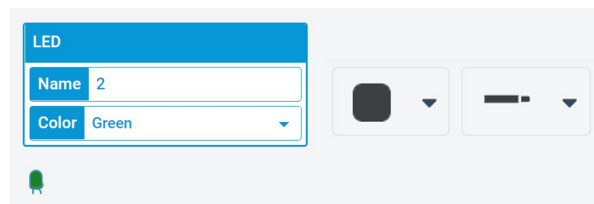


## Circuits in Series

1. Start by creating a simple circuit like this one.



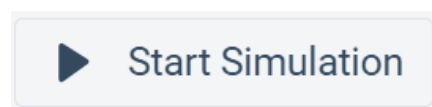
Note: You can change the colour of the wires and LEDs with the menus.



2. Select the Code section and create this program.



3. Click start simulation. What do you observe?



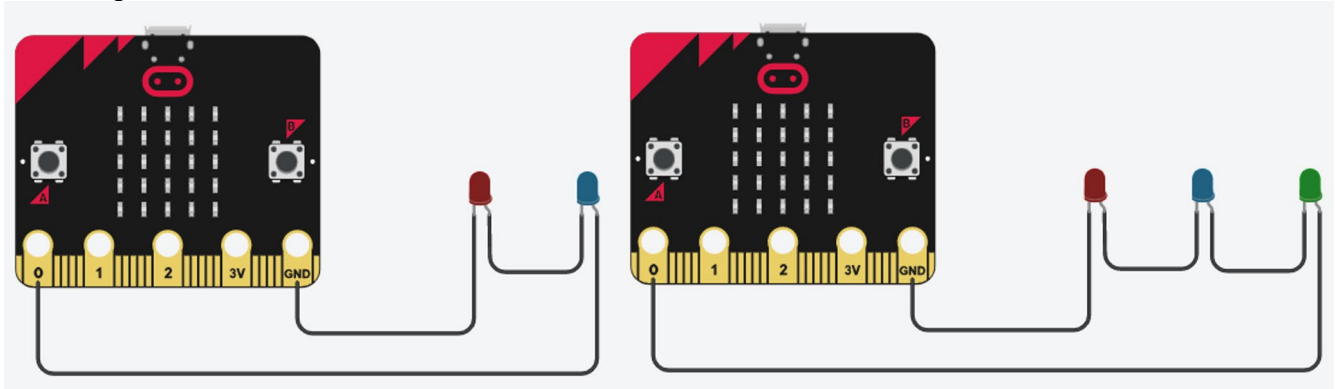
Observation:

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4. Add a second LED to your simple circuit. Start the simulation and record what you observe. Repeat this with a third LED.



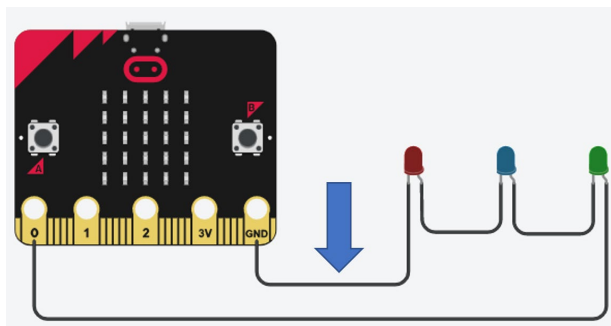
Observation:

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5. Delete the wire shown. Start the simulation and record what you observe.



Observation:

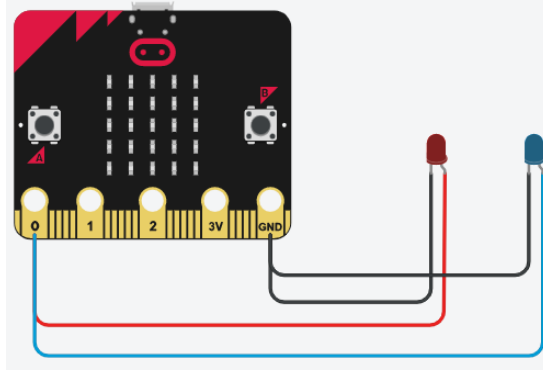
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## Circuits in Parallel

1. Start with your simple circuit and add a second LED in parallel. Run the simulation and record what you observe.



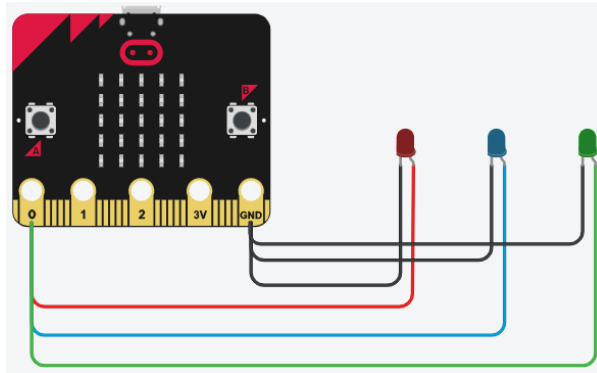
Observation:

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2. Add a third LED in parallel. Run the simulation and record what you observe.



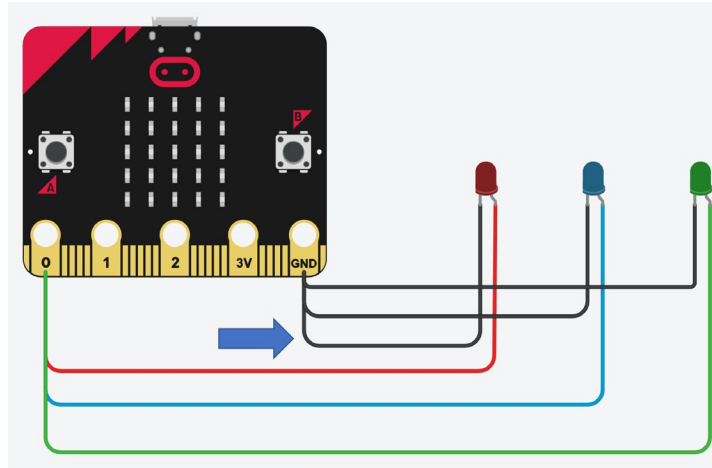
Observation:

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3. Delete the wire shown. Start the simulation and record what you observe.



Observation:

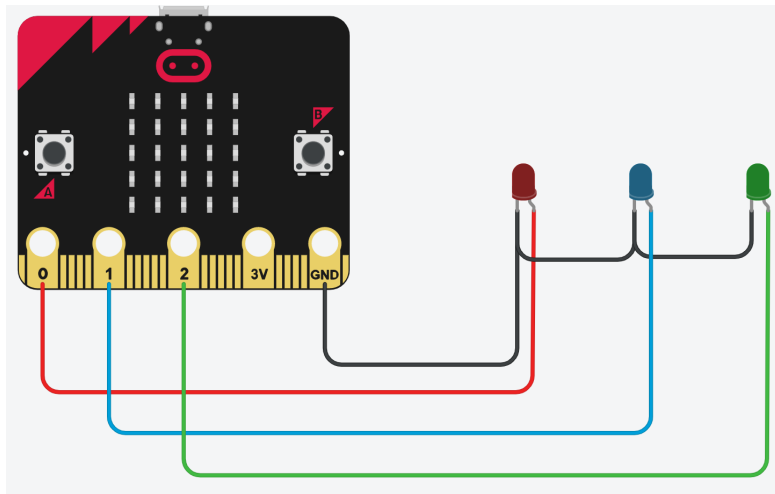
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### Mystery Circuit

1. Create this circuit and run the simulation with the code that you already have. Record your observations.



Observation:

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2. Try to choose another ‘pin’, for example “P1” or “P2”. What do you observe now when you run the code?

Observation:

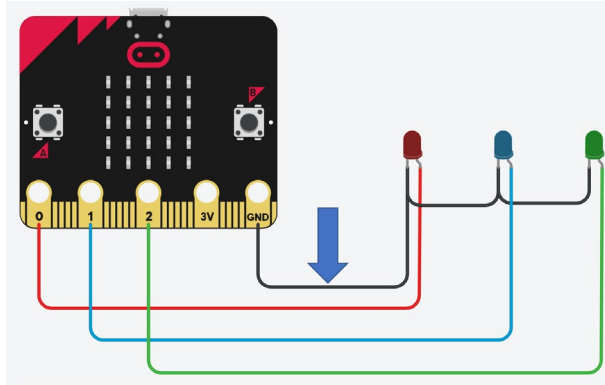
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3. **Coding Challenge A.** Create a program so that the LEDs light up one after the other.
4. **Coding Challenge B.** Create a program that will turn on all the LEDs at once.

5. Using the code that turns on all the LEDs at once, delete this black wire, and run the simulation. What do you observe?



Observation:

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**Conclusion**

Based on your observations, is the mystery circuit a circuit wired in series or in parallel? Why do you think that is the case?

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